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WHITE (C.B.)

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# REMARKS

— ON THE —

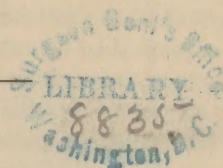
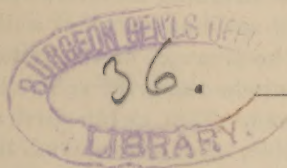
Proceedings of the Meeting of Physicians

TO DISCUSS

CARBOLIC ACID DISINFECTION,

Published in the New Orleans Medical and Surgical Journal,  
November, 1875.

BY C. B. WHITE, M. D.



From "The New Orleans Medical and Surgical Journal," March, 1876.

NEW ORLEANS, December, 1875.

*To Editor of N. O. Medical and Surgical Journal:*

Sir—The papers presented to the meeting of physicians to discuss Carbolic Acid, evince serious misconception of the theory and method of disinfection against yellow fever, and contain some important errors of statement.

The marked localization and the very limited range of action of the cause of yellow fever, are universally recognized facts. Reasoning from the method and range of action, and mode of propagation of yellow fever, its poisonous cause is evidently not gaseous in its nature. It seems to attach itself to the soil, to walls, and probably to surfaces in general. If it be a germ, either vegetable or animal, it seems to be low-lying, propagating from centres along surfaces, equally in all directions, against the wind as freely as with air-currents. It is also evident that the cause must ante date the effect; that the yellow fever poison exists in activity some days before the moment of the attack of sickness, as the period of incubation in most persons is four days, and the poison doubtless has existed in more or less force for an indefinite period preceding the precise moment at which the incubation of the disease began.

To completely destroy the poisonous cause, and to arrest the spread of the disease, disinfection must, both in theory and practice, be applied to every infected portion of the whole suspected locality. Even with cordial coöperation on the part of householders, this cannot be effected with absolute perfection in an inhabited square. The disinfectant is distributed therefore upon the surface of the streets, both roadway and banquette, at a distance supposed to be entirely beyond the presence of the yellow fever poison, in such manner as to encircle the fever centre by broad continuously disinfected surfaces. This is repeated at short intervals, to preclude, if possible, the passage of the poison across the belt thus laid down. The impossibility of complete disinfection of all surfaces in infected localities, under houses, etc., is evident, and the expression "thoroughly disinfected" is therefore merely relative, denoting the nearest attainable approximation to perfect disinfection.

Perfection in mode of disinfection being impossible, total and immediate annihilation of the yellow fever poison is not expected, but its propagation is rendered less rapid and its march im-



peded. If foci of infection appear somewhat late in the summer, the practice of disinfection may delay the general spread of the disease, until a decided fall of temperature puts an entire stop to its progress.

The experiment of controlling yellow fever by use of coal-tar acids is being conducted in as strict accordance with scientific method as is practicable with the means and intelligence engaged. All cases, with their locality, history, date of application of disinfectants and their apparent results, their real and apparent relation to previous and subsequent cases, are carefully studied and recorded. The gathered facts, as at present understood, give a result in favor of the control of yellow fever by the use of the coal-tar acids. If the fact of the complete or partial control of yellow fever by any one agent be ever established, thereafter experiment can advantageously begin to secure others more pleasant and cheaper.

On page 416 of the Journal, in section 1st of the letter of Dr. Brickell, the applicability of carbolic acid to the destruction of cholera germs is allowed, but the work and testimony of Dr. Crookes in the cattle plague of England are totally ignored.

In sections 2, 3 and 4, of the same letter, the absurdity of disinfection of the atmosphere is argued. As general atmospheric disinfection has been neither proposed nor attempted by those who are conducting the carbolic acid experiment, consideration of this and similar arguments in the following papers is unnecessary.

Section 5 of the same letter, in answer to the question whether "the Board of Health did really use carbolic acid in these experiments," says: "Beyond a doubt they (the Board) never have." "They have used, and are still using, only a crude compound, which most probably does not contain ten per cent. of carbolic acid proper," etc. The so-called crude carbolic acid used for disinfection has been each year, and several times each year, submitted to chemical analysis, and has been announced by Dr. Perry to contain amounts of acids, carbolic and cresylic, never less than eighteen per cent., usually twenty to twenty-five per cent. Besides these it contains other empyreumatic acids, stated by the latest experimenters to be more energetically disinfectant than pure carbolic acid. The white disinfecting acid, known to commerce as Calvert's No. 5, is a mixture of cre-

sylic and carbolic acids, the latter predominating, but free from tar oils, and in consequence is frequently termed pure acid.

The same section states: "The result of my inquiries leads me to believe that it would have been far cheaper for the Board of Health to have used real carbolic acid, and then their experiments would have been legitimate." "Real carbolic acid," affording by chemical manufacture picric acid, is of so considerable value as to be unavailable for general disinfection, even were its disinfecting power equal to that of cresylic acid. If such "real carbolic acid" had been used, "then their experiment would have been legitimate." It is difficult to understand why illegitimacy attaches to an experiment because the remedy used is ill smelling.

On page 419, speaking of the yellow fever present this year, the closing line of the remarks of Dr. Henderson states: "It (the fever) will not probably affect a large number of people, because the strangers in our city are wanting." The assertion that "material" "food for yellow fever" is not to be found in the city, has been quite frequently made by those not well informed on the subject. In 1873, and each succeeding year, a census has been taken of every square wherein a case of yellow fever has occurred, and which has been disinfected. This examination shows a very large proportion never to have had yellow fever. In the 17 squares disinfected in the Fourth District last summer, and in which seventeen cases of fever occurred, a population of six hundred white persons reside who have never had yellow fever. As to the necessity of an influx of strangers to furnish food proposed, it should be stated that, of the 17 cases mentioned above 11 were natives of Louisiana, and of these, seven were natives of New Orleans. In the infected portion of the Second District reside 116 whites, less than five years in the city, and of the total population of 1788 whites, only 173 positively reported themselves as having had yellow fever. In the two squares disinfected on Miro street, reside 36 white and 35 colored inhabitants. Of these, 28 white and 33 colored persons had never had yellow fever. In the Jackson Railroad focus resided, whites 92, colored 34, of whom whites 64 and colored 30 had never had yellow fever. In the New Basin focus resided; whites 163, colored 66. Whites 124 and colored 64 have never had yellow fever.

Upon page 419, in its closing paragraph, are quoted with



approbation the experiments of Dr. McDougal on vaccine virus, who says: "It is surely plain that the destructive action of carbolic acid on *variolous* matter and other *zymotic* poisons must be null." It is well known that agents quickly injurious or even destructive of life to one class of beings are borne with impunity by another class, or may even serve to support its life. No results of experiments upon variolous matter, yellow fever, measles, scarlatina, or any other zymotic poison, are offered in evidence of the truth of Dr. McDougal's assertion, and, in the absence of facts, the statement must pass as a piece of unscientific, marvellous assumption on the part of Dr. McDougal.

In Sansom's "Antiseptic system" will be found full and satisfactory reports of all experiments up to 1871—the date of its publication.

Carbolic acid has never been used by the Board of Health to disinfect small-pox cases. In 1869, in an epidemic of small-pox in San Francisco, it was thoroughly and scientifically tried, and found to have no value as a disinfectant against that disease. The worthlessness of carbolic acid as a destroyer of variolous poison being well known, it has never been used for that purpose here.

According to the fourth line of page 421, "Acid phenic is disinfectant, but only temporary." If carbolic acid by actual contact kills animal or vegetable growths, its disinfectant action is permanent as to them, but of course will not hinder the multiplication of organisms which have escaped its effect. The paragraph as a whole confounds the idea and action of deodorants and disinfectants. Carbolic acid has no retroactive effect, is not directly or properly a deodorant, but indirectly becomes one by hindering putrefactive processes and the formation of sulphur compounds. The zinc-iron disinfectant, now several years in use, combines the chemical odor-destroying power of the mineral salts with the preventive effect of the coal-tar acids.

On page 426 of the papers is found the following paragraph: "Every house where a case was reported as having occurred, was, under the direction of the health officers, cleansed and fumigated with sulphurous acid gas and carbolic acid gas. The premises were subjected to the provisions of the health ordinance, and the privies were purified by the sulphate of iron." This passage is from the Report of Dr. S. A. Smith, President of

the Board of Health, save the word "gas," interpolated after carbolic acid.

The very next sentence of the report is, however, not given, but is this: "The slow development of the cause of the fever, its apparent temporary suspension in particular localities, the exceeding mild character of the disease, *leads to the hope that it may be kept in check, if not entirely eradicated in the first cases, by the prompt application of disinfectants.*"

The theory and method of disinfection in 1867 having been essentially different from that now in use, discussion of its completeness and effectiveness that year is needless.

On the 16th of March, 1870, the original Quarantine Act of 1855 was so amended as to give the Board of Health power to select its Sanitary Inspectors, fix their salaries, and to call upon the city government for any disinfectants needed.

The successful work of Dr. Crookes against the cattle plague suggested the use of the local applications of carbolic acid, but it was not until about the close of September, 1870, that experience and reasoning upon observed facts originated the governing idea of disinfection as now practised. Those who followed the sanitary work of 1870 most closely, find the testimony of even that first year of attempt favorable to carbolic acid disinfection. The figures given on page 428 of the Journal show that, while yellow fever ceased to extend, and cases diminished in the Second District, in other parts of the city, where disinfection was not so energetically carried forward, the disease spread and cases became more numerous.

The statement that "It is evident that the disease, as usual, declined as the season progressed, and the weather became dryer and cooler," is not true of 1870, as it declined in the Second District and increased in the other parts of the city.

On page 429 it is asserted: "These facts, on the contrary, show in the clearest manner that the limited nature of the epidemic (1873) was due to the peculiar conditions of the climate and population. One essential element was wanting—strangers, unacclimated persons from Europe and the colder regions of America."

The disease appeared in New Orleans before it did in either Shreveport or Memphis, and the greatest mortality was at nearly the same date as at Shreveport. As to population, there were in the various squares of the city in which yellow fever occurred,



a population of whites who had come from abroad, or been born since 1867, of 4237, of whom 388 only had had yellow fever. Whether this limited prevalence be regarded as sequence or consequence in 1873, it has since been repeated here, as a contrast to the experience of other localities, and can claim consideration, if disinfection "be discussed with calmness, deliberation and justice."

The first paragraph of page 430 contains the expression, "it will be fair to add at least one-half more, giving at least 1361 as the mortality due to this disease under carbolic acid disinfection," etc. The experience of 1870, when thirteen person who died of undoubted yellow fever were interred upon certificates of death by pernicious, congestive, or other forms of malarial fever, and the consequent failure to employ disinfectants at the moment when most, if ever valuable, namely, at the very beginning of an epidemic, led to the measure, adhered to since that year, of securing from the Registrar's office, every day after the 1st of June, a list of all deaths by all fevers and congestions. These were immediately furnished to the Sanitary Inspectors of the districts, and prompt investigations made, thus rendering it highly improbable that one-third of all deaths by yellow fever escaped observation.

The following table shows the deaths by yellow fever during the years named, and also the deaths by all forms of malarious fever during the last six months of each year, the period during which yellow fever prevailed.

<i>Year.</i>	<i>All Malarious Fevers.</i>	<i>Yellow Fever.</i>
1869	252	3
1870	199	587
1871	216	59
1872	173	39
1873	318	226
1874	398	11
1875	298	63

It appears that there is no definite relation between the mortality from malarial fevers and that from yellow fever. Certainly they do not follow the same rule in prevalence.

It is sometimes imagined that persons may die of yellow fever, and be interred as dead of various forms of malarial fever; but reference to the respective lines of death by fevers in our mortuary

charts shows that no marked rise of the line representing these fevers occurs; such as would be visible were yellow fever causing any considerable, though concealed, mortality. The daily examination of the registry for all deaths by fevers and congestions, and their subsequent investigation by the Sanitary Inspectors, would prevent any serious mistake, even though the medical profession was generally lacking in knowledge and veracity, as such insinuations imply.

The entire baselessness of the assumption of its "being fair to add one-half more to get the real number of deaths by yellow-fever" is evinced by analysis of the mortality of the year 1870. 587 deaths are reported by yellow fever, and one-half of that number wrongly named,  $293\frac{1}{2}$ , are to be added to the 587, to get the actual mortality by yellow fever. As but 199 persons died of malarious fevers during the months in which yellow fever prevailed, there are yet lacking  $94\frac{1}{2}$  deaths to fill the list, granting all the malarious deaths to have been yellow fever deaths. Yellow fever and the professor seem to have "overdrawn their account."

The second proposition, page 430, is not confirmed by the serious epidemics of 1854 and 1855, following immediately upon the great epidemic of 1853, nor by the successive epidemics of 1841, 1842, and 1843.

Proposition No. 3 of same page is incorrect in three instances, viz., stating that no yellow fever occurred in 1859, 1860, or 1865. Dr. Chaillé states (Table No. 2, "Vital Statistics"), that 91 deaths occurred in 1859, 15 in 1860, and one death in 1865.

The statement of proposition 4 needs examination. Among those having a "limited number of cases" ~~in~~ the year 1818—deaths 115. The estimated population was then 25,000. 115 deaths then were equivalent to 920 now. In 1822 (population in 1820, 27,176), 808 deaths occurred, equivalent to more than 6000 in 1875—a very respectable epidemic.

In 1829, population about 45,000, deaths 215—equivalent to 968 now. In 1833 population about 55,000, deaths 210—equivalent to 775 now. 1839 was an epidemic year; 1842 was also an epidemic year. [Chaillé] These ~~and~~ <sup>etc.</sup> among the years given as years of limited prevalence, whilst 1870, with a yellow-fever mortality of 587, is classed among the years marked by "great epidemics."

On page 421, Professor Lewis remarks of "the use or



rather abuse of carbolic acid," that in 1867, "*It had no effect whatever.*"

On page 13 of the Report of the Board of Health for 1867, is the following paragraph from the official report of Professor Lewis, then health officer of the Third District. "The number of houses disinfected of yellow-fever from the middle of August to November 1st, was about three hundred. The first case died at the hospital, but was taken there from Antonio Baptistillas, in Victory street near Elysian Fields. Four days afterwards, there were upwards of forty cases on Victory from Frenchman to Elysian Fields.

Every house is a boarding house, and many were filled overflowing with strangers.

These houses were not only fumigated with sulphur, and disinfected with sulphate of iron in solution, but were pumped from top to bottom with carbolic acid, which impregnated the atmosphere for some distance off. This was repeated as often as new cases occurred.

From the 1st of September to the present time, (Date of report December 2d, 1867,) there has not been a more healthy neighborhood, and notwithstanding new sets of boarders have taken the places of those who have gone away, also equally unacclimated, but very few to my knowledge have been sick with yellow-fever."

It is evident that Professor Lewis drew correct inferences from his own labors in the Third District. The principle of this disinfection, however, not being clearly understood at the time, and the disinfection being effected in no portion of the city with a promptitude and thoroughness at all comparable to that manifested by Dr. Lewis, similar results were not elsewhere attained, and the Professor, as is shown by remarks in the paper now under consideration, has thereby been led to doubt the conclusions legitimately drawn from his own thorough, as the word was then understood, and energetic work.

Section 3, page 436, infers from experience of 1875, that the use of carbolic acid disinfection does not prevent the spread of yellow-fever, because, after breaking out in one place, it has done so in other localities. Before such conclusion can be considered a necessary one, the questions of the indigenous or exotic nature of yellow-fever, and the portability or non-portability of

its cause must be settled: certainly five foci, independent of those in the Second District, made their appearance last summer.

As to the statement that "it has again broken out in the same house and in the same squares after a thorough disinfection of the premises," the records reply that in two squares in the Second District; second case occurred after so-called "thorough" disinfection. One of these appeared thirty days after the first disinfection, and the house itself was never disinfected, owing to the opposition from the family. Indeed, the disease may have been contracted in another locality. The second case is known to have spent the larger portion of the night, six days before his attack, in an infected house. Other similar cases reported proved, upon careful analysis of the facts, to be a failure of thoroughness of disinfection, or were synchronous with that process.

In the five other yellow-fever foci of the city, but one case is known to have appeared after disinfection.

On page 437, in the list furnished as characterized by the absence of an epidemic, the following are incorrect: 1824, 1825, 1827, 1828, 1829, 1830. [Chaillé.]

Further along the statement is made. "In 1854 we had an unknown number of deaths throughout the city, and no epidemic."

This statement appeared in the reprint of the paper without correction. In 1854, a very severe epidemic of yellow-fever prevailed, and the mortality therefrom was 2425.

Still further along appears the statement, "in 1857 we had an unknown number of deaths throughout the city and no epidemic." There were 200 deaths from yellow-fever in 1857, and the first death (undisputed) did not occur till September 20th, thirty-nine days later than the first death of 1875.

For the corrections made of these numerous errors, see "Vital Statistics of New Orleans," by Stanford E. Chaillé, M.D., Professor of Physiology and Pathological Anatomy, Medical Department of the University of Louisiana.

In reference to the matter of the failure of Carbolic Acid disinfection in the epidemic of 1873 at Memphis, spoken of upon page 439, the following extract from a letter of Dr. Erskine, President of the Board of Health of Memphis, is furnished:—

"I did not enter upon duty as President of the Board of Health until about the 10th of October. The disease had then prevailed more than three week as an epidemic. Carbolic acid had not



been used up to that time. We commenced the use of it about the middle of October; were unable to obtain carbolic acid sooner. By that time the disease had extended itself all over the city.

"I do not think we had a fair trial of it, in fact, we used it, comparatively speaking, very little.

"I should like to see it tried more thoroughly."

The fact that water extinguishes fire is not invalidated, if a city on fire at hundreds of points is totally burnt.

In conclusion, to destroy yellow fever, or limit its spread by disinfection, would probably be a matter difficult of execution, even if all the factors of the experiment were known and valued. Owing to our ignorance at the present time, the difficulties surrounding the experiment are correspondingly great. As, however, all known cases are recorded, mapped, and investigated, even though mistakes are made, it is hoped, if the process be continued sufficiently long, that a result conformable to truth will be at length evolved. In a series of observations conducted on correct principles, honestly made and recorded, the tendency is to eliminate errors, to bring truths into prominence, and develop law. Careless or partial statement, heated or partial special pleading, hasty conclusions, and delusory generalizations, are ~~seriously~~ <sup>seriously</sup> prejudicial to proper scientific inquiry. The experiment under discussion is out of the cell of the theorist and the laboratory of the chemist, and is to be settled by practice. While recognizing its position as the servant of the public, the Board of Health accepts no dictation from the past or present, but will cheerfully conform its theories and methods to the logic of carefully accumulated and analyzed facts.

Very respectfully,

C. B. WHITE, M.D.

